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Connecting the Dots Between IoT Data and Equipment Efficiency for OEMs

Posted by Hydraulics Team

Today, most connected things belong to the consumer IoT (with smartphones topping the list). But another, less visible industrial IoT, with its heavy-duty infrastructure (such as power and transportation) and applications (such as industrial equipment, smart plants, smart vehicles and advanced medical devices) is where the most significant transformation is about to occur. By taking advantage of the IoT, OEMs are finding new ways to drive efficiencies into their operations and deliver transformational value to customers. Rather than simply reacting to feedback like warranty claims or product failures, a proactive approach is needed, an approach that enables OEM engineers to apply analytics to operational and performance data to derive meaningful insight. The result is that engineering teams can learn dynamically and update product performance much faster than in the past.

As more industries increase their reliance on IoT-enabled devices to transform their engineering development processes and day-to-day interactions, OEMs must recognize the enormous opportunity to operate more effectively and efficiently. There are significant benefits for industrial OEMs that leverage these types of solutions. Working with IoT reduces total cost of ownership and product-development complexity, helping OEMs bring products to market faster, increase efficiencies, and focus on their core competencies to deliver enhanced customer experiences.
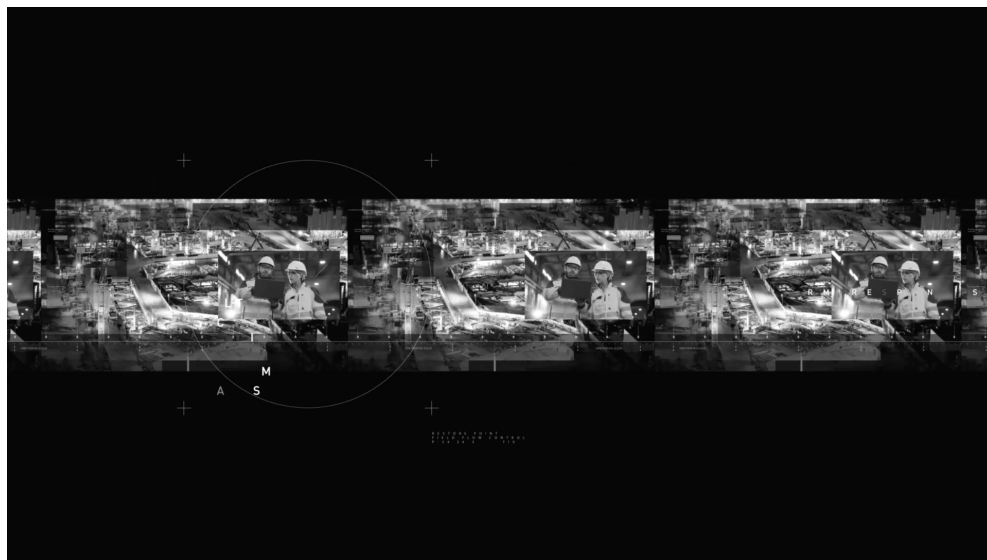
For many OEMs, the motivation to develop IoT solutions starts with reducing costs of remote support and maintenance for their equipment, but for more progressive OEMs, that's just the start. OEMs should also look at how a connected device can generate new value for their product lines through new services and business models. These ways of thinking are what allows the data sourced from IoT to not only support regular business operations but also increase opportunities and equipment efficiencies overall.

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Invaluable insights

The key to improving the off-road or mobile equipment efficiencies is being able to easily combine and understand data from different sources, such as sensors, industrial control systems, infrastructure and IT systems and deliver valuable new insights into asset health. Detailed understanding of equipment performance through IoT can help identify and prevent problems in the following ways:

- Provide advanced warning of equipment degradation or failure to avoid unplanned downtime
- Carefully monitor production line quality. The data can present signs indicating if the equipment is properly calibrated or if adjustments are needed. IoT can signal alarms to alert the managers when component metrics begin to divert from prescribed dimensions, track process parameters (speed, time, temperature, etc) to ensure they stay within the target range, and accurately determine and remedy root causes of quality problems.
- Analyze historic process and performance data to optimize scheduled maintenance planning, leading to lower maintenance costs, reduce materials and supplies, and higher equipment availability.

Download the Case Study: Mobile Eqiupment OEM Stays Connected with Mobile IoT Technology

Enhanced product development

Traditional 'end-to-end' engineering practices were not designed to support today's systems of systems. Producing in linear phases, requirements definition, followed by design, followed by building, testing and so on can result in bottlenecks and delays that slow down product releases. In this traditional model, the only design feedback is through sales figures and consumer complaints after design and production are complete. With an intelligent, proactive, closed-loop development process, product engineers and developers can:

- Integrate and analyze data that crosses the boundaries of traditional engineering domains, including mechanical, electrical and software engineering
- Verify that the system is working appropriately before expensive physical products are built for testing
- Run different types of analysis when traditional testing is not enough for certification or complexity
- Handle multiple and different requirements, along with tens to hundreds of product variations in parallel.

An IoT solution enables continuous validation for OEMs, which ultimately helps engineering teams make sure they have captured the correct requirements and validated them throughout the development process so they can design the right product to meet customer needs. Continuous verification helps teams make sure they are adhering to those requirements, so they can build the product right. The advantage is that manufacturers can detect defects early in the development cycle, greatly reducing the cost of repairing defects that are found later. This ultimately produces a higher quality product that meets customers' deadlines and expectations.

Connecting data to operational efficiencies and competitive edge

To succeed in this ever evolving IoT world, OEMs of heavy, off-road equipment have to re-examine the entire way they do business. The availability of operational data connects the dots with analytics providing a huge competitive edge that enables businesses to develop new capabilities and services that extend product value. Companies can analyze the data that is generated by products, corporate assets and the operating environment, and use insights from that data to accelerate innovation, increase customer satisfaction and enable new business models (such as delivering products as a service).

Parker's Mobile IoT solution is an IoT solution specifically designed to connect industrial processes and assets with customers and services for heavy, off-road equipment OEMs to deliver data-driven value in today's shifting business model.
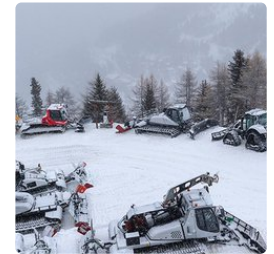
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